

Final Exam Review #1

Determine the quadrant that the terminal side lies in for the following.

1. $\theta = \frac{47\pi}{6}$

2. $\theta = \frac{26\pi}{4}$

Solve for x.

3. $\frac{1}{4} = 8^{8x+4}$

4. $\frac{1}{125} = 25^{5x-5}$

Find the derivative at the indicated point.

5. $f(x) = x^2 + x - 1$ at $(-8, 55)$

6. $f(x) = x^3 - 5x^2$ at $(-1, -6)$

Choose the correct standard form of the specific hyperbola.

7. a) $\frac{(x+3)^2}{400} + \frac{(y-2)^2}{441} = 1$

Center: $(-3, 2)$

Focus: $(-32, 2)$

Vertex: $(17, 2)$

b) $\frac{(x-3)^2}{400} - \frac{(y+2)^2}{441} = 1$

c) $\frac{(x+3)^2}{400} - \frac{(y-2)^2}{441} = 1$

d) $\frac{(y-2)^2}{400} - \frac{(x+3)^2}{441} = 1$

8. a) $\frac{(x+2)^2}{576} - \frac{(y+4)^2}{100} = 1$

Center: $(-2, -4)$

Focus: $(-2, 22)$

Vertex: $(-2, 20)$

b) $\frac{(y+4)^2}{576} + \frac{(x+2)^2}{100} = 1$

c) $\frac{(y-4)^2}{576} - \frac{(x-2)^2}{100} = 1$

d) $\frac{(y+4)^2}{576} - \frac{(x+2)^2}{100} = 1$

9. At most, how many extrema and zeros can $f(x) = x^5 + 5x^4 - 7x^3 + 4x^2 + 3x + 1$ have?

10. At most how many extrema and zeros can $f(x) = x^3 + 2x^2 - 4x - 5$ have?

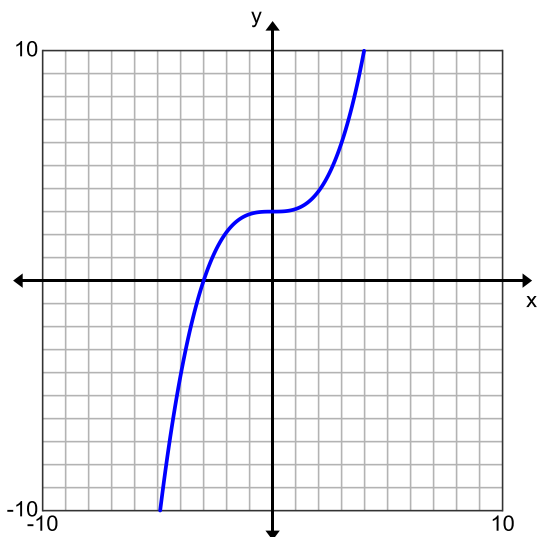
Find the domain & range of the function.

11. $f(x) = 9|x+7|$

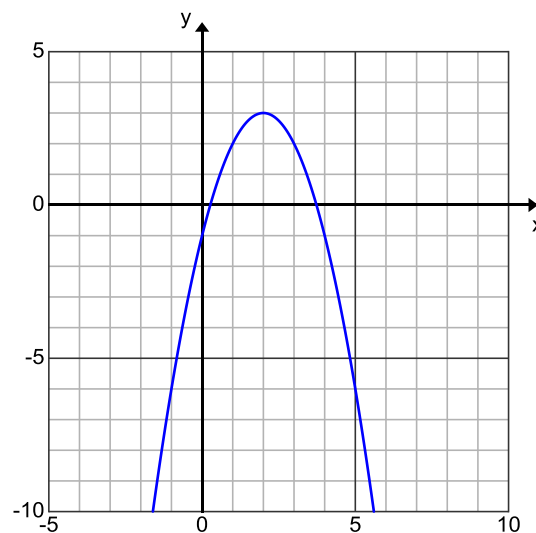
12. $f(x) = 3|x+3|$

Determine the intervals on which the function is increasing, decreasing or constant.

13.



14.



15. If $f(x) = |5x|$ and $g(x) = 2x$, find $(g \circ f)(x)$.

16. If $f(x) = 4\sqrt{x}$ and $g(x) = x - 6$, find $f(g(x))$.

Find the inverse of the function.

17. $f(x) = 4x - 4$

18. $f(x) = 3x + 4$

Expand the log.

19. $\log_b \sqrt{\frac{49}{69}}$

20. $\log_b \sqrt{xy}$